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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Stephen K. Pinto

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EXAMINER

OCHOA, JUAN CARLOS

ART UNIT

PAPER NUMBER

2123

NOTIFICATION DATE

DELIVERY MODE

10/14/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,630	<b>Applicant(s)</b> PINTO ET AL.	
	<b>Examiner</b> JUAN OCHOA	<b>Art Unit</b> 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-19, 22, 23 and 25-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11, 13-19, 22, 23 and 25-30 is/are allowed.
- 6) ☒ Claim(s) 31-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The amendment filed 07/19/2010 has been received and considered. Claims 1–11, 13–19, 22, 23, and 25–40 are presented for examination.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 31–33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. As to claim 31, the limitation “in connection with a project” is dangling or disconnected from the claims. Either use the “project” or connect the “project” to the limitations following it. It’s unclear what is in connection with a project.
5. Dependent claims inherit the defect of the claim from which they depend.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Examiner would like to point out that any reference to specific figures, columns and lines should not be considered limiting in any way, the entire reference is considered to provide disclosure relating to the claimed invention.

10. Claims 31–33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bounsaythip et al., (Bounsaythip hereinafter), Overview of Data Mining for Customer Behavior Modeling, (see IDS dated 10/20/08), taken in view of Goldman et al., (Goldman hereinafter), U.S. Patent 6,820,070

11. As to claim 31, Bounsaythip discloses a machine-based method comprising in connection with a project, generating a predictive model based on the historical data

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(see page 7, # 2.4), and displaying to a user a lift chart, monotonicity, and concordance scores associated with each step in a step-wise model fitting process (see page 40–42, # 7; page 47).

12. While Bounsaythip discloses "New fields can be generated through combinations, e.g. frequencies, cross-tabulations, averages and minimum/maximum values, relationships between different profiling variables etc..." (see page 6, # 2.3.3, next to last paragraph); Bounsaythip fails to expressly disclose automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data about a system being modeled.

13. Goldman discloses automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data about a system being modeled (see col. 1, lines 31–35; col. 3, lines 23–35, 49–58).

14. Bounsaythip and Goldman are analogous art because they are related to data mining.

15. Therefore, it would have been obvious to one of ordinary skill in this art at the time of invention by applicant to utilize the selecting step of Goldman in the method of Bounsaythip because Goldman develops a method, Knowledge-Tree (KT), of conceptualizing any sequence of relations among objects, where those relations are not detectable by current methods of knowledge engineering and wherein such a conceptualization is used to reduce the dimension of data mining which is a requisite stage in automatic decision-making (see col. 3, lines 9–15), and as a result, Goldman reports the following improvements over his prior art: an innovative way of

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conceptualizing any sequence of relations among objects and the use of the KT map, which manifests this conceptualization as an infrastructure layer for an Automated Decision Maker, which expands beyond commonly used computational methods of information acquiring and analysis which are followed by decision-making that are currently known as Expert systems (see col. 6, lines 29–40).

16. As to claim 32, Goldman discloses a method also including enabling the user to observe changes in the fit as variables associated with the historical data are added or removed from a predictor set of the variables (see col. 6, lines 59–64).

17. As to claim 33, Bounsaythip discloses a method also including enabling the user to terminate the fitting process when the fitting process reaches an optimal point (see page 33, last two paragraphs).

18. Claims 34–40 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Bounsaythip taken in view of Walter et al., (Walter hereinafter), U.S. Pre-Grant publication 20030088565.

19. As to claim 34, Bounsaythip discloses a machine-based method comprising receiving from separate sources, sets of potential predictor variables representing historical data and dependent variables representing response propensities about a system being modeled (see page 6, # 2.3.2, 2.3.3; page 7, # 2.4), and combine at least two models based on response propensities of each model in order to create cross-modal deciles and based on data weaving of the historical data to provide cross-modal optimization (see page 7, # 2.4; page 39, # 4.6).

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20. Walter discloses enabling a user of a model generation tool to combine at least two models (see paragraphs [0027,9]), the combining including concatenating the predictions of the two models (see paragraphs [0028]).

21. While Bounsaythip discloses "New fields can be generated through combinations, e.g. frequencies, cross-tabulations, averages and minimum/maximum values, relationships between different profiling variables etc..." (see page 6, # 2.3.3, next to last paragraph); Bounsaythip fails to expressly disclose enabling a user of a model generation tool to combine at least two models, the combining including concatenating the predictions of the two models.

22. Such features are however well-known in the art. For example, Walter discloses to include cross products of at least two variables, each being from the first population of predictor variables and to include cross products of at least two variables, at least one of the variables being from the pool of predictor variables and having less than the first predetermined level of significance (see paragraphs [0133–9]) and automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data (see paragraphs [0003,0007]).

23. Bounsaythip and Walter are analogous art because they are related to data mining.

24. Therefore, it would have been obvious to one of ordinary skill in this art at the time of invention by applicant to utilize the combining of Walter in the method of Bounsaythip because Walter provides for building, using, and managing predictive models as part of a machine learning process, a Block Model Averaging System (BMA),

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which enables users to build/train, test, and maintain predictive statistical models that can be used to gain knowledge about data (see paragraph [0005]), and as a result, Walter reports that his BMA can be used to create traditional classification models, such as: classification trees, classification neural networks, logistic regression, and Nave Bayes; as well as traditional regression models, such as: regression trees, regression neural networks, and linear regression. BMA may be useful to create a variety of other statistical models as well, including those that are not yet known, especially those models that can employ incremental techniques to discover information about data. BMA is superior to a "bagging" approach in that the entire input data is used to build the predictive models based upon the data (not just samples of the input data), and thus BMA is less prone to criticism from statisticians. Also, because BMA can be used incrementally to process a very large data set, the model building process time doesn't continue to increase with the size of data. In addition, as will be described in further detail below, the BMA process is compatible with streaming and other types of dynamic data, and BMA models can adapt to newly received data as it is processed (see paragraph [0027]).

25. As to claim 35, Walter discloses a method in which enabling the user to combine the models includes providing a user interface that enables the user to identify variables to be combined (see Figs. 7, 9; paragraphs {0037,9}).

26. As to claim 36, Bounsaythip discloses a method in which the system being modeled comprises behavior of prospective or current customers with respect to products or services of a company and the method also includes adjusting outcome

variables to normalize response rates across products or services with different response rates (see page 39, # 4.6).

27. As to claim 37, Bounsaythip discloses a method in which the system being modeled comprises behavior of current customers with respect to retention of a current service or product of a vendor and the method also includes adjusting variables to normalize response rates across products or services with different response rates, using the computed propensities as indices of the scores (see page 4, # 2.2, 1st paragraph).

28. As to claim 38, Bounsaythip discloses a method also comprising determining a course of action to yield the most positive net present value outcome (see page 4, # 2.2, 1st paragraph).

29. As to claim 39, Bounsaythip discloses a method in which the determining includes selection of a mix of channel (see page 30, last paragraph) and product combinations (see page 4, # 2.2, 1st paragraph).

30. As to claim 40, Bounsaythip discloses a method in which the determining includes predicting retention in combination with response rate to predict net present value (see page 4, # 2.2, 1st paragraph).

### ***Allowable Subject Matter***

31. Claims 1–11, 13–19, 22, 23, and 25–30 are allowed over prior art of record.

The following is a statement of reasons for the indication of allowable subject matter:

While Goldman discloses variables being from the pool of predictor variables and

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having less than the first predetermined level of significance (see “more esoteric and overlooked variables could begin to be added to the present invention model, in its empirical self-learning capacity” in col. 22, lines 33–48),

Bounsaythip discloses “New fields can be generated through combinations, e.g. frequencies, cross-tabulations, averages and minimum/maximum values, relationships between different profiling variables etc...” (see page 6, # 2.3.3, next to last paragraph), Bloom, U.S. Pre–Grant publication 20030212678, (see PTO-892 Notice of Reference Cited dated 2/19/10), discloses to include cross products of at least two variables, each being from the first population of predictor variables and to include cross products of at least two variables, at least one of the variables being from the pool of predictor variables and having less than the first predetermined level of significance (see paragraphs [0133–9]),

Walter discloses to include cross products of at least two variables, each being from the first population of predictor variables and to include cross products of at least two variables, at least one of the variables being from the pool of predictor variables and having less than the first predetermined level of significance (see paragraphs [0133–9]) and automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data (see paragraphs [0003,0007]),

Fisher et al., (Fisher hereinafter), Pre–Grant publication 20030171829, discloses automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data (see paragraph

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[0085]),

Xu et al., (Xu hereinafter), Pre-Grant publication 20040030667, discloses automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data (see paragraph [0010]),

and Cabena, Intelligent Miner for Data Applications Guide (see IDS dated 12/18/06),

(Cabena hereinafter), discloses automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data (see page 11, 1st paragraph),

none of these references taken either alone or in combination disclose a method specifically including “extending the second population of predictor variables to include cross products of at least two variables, at least one of the variables for at least one of the cross products being from the pool of potential predictor variables that are associated with the historical data and having less than the first predetermined level of significance”, which the Examiner interprets as “a machine-based method includes, in connection with a project in which a user generates a predictive model based on historical data about a system being modeled: selecting variables having at least a predetermined level of significance from a pool of potential predictor variables associated with the data, to form a population of predictor variables, extending the population to include non-linear interactions of variables, extending the population to include linear and non-linear extensions with remaining previously excluded variables” (see description of the instant application page 1, lines 22–28) and specifically argued as ‘Claim 1 also recites that at least one of the variables for at least one of those cross

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products has "less than the first predetermined level of significance." Because claim 1 earlier recites "selecting variables having at least a first predetermined level of significance from a pool of potential predictor variables ... to form a first population of predictor variables," the at least one variable for at least one of the cross products is from a group of variables that were not selected in the initial pool of potential predictor variables' (see Applicant's arguments filed 07/19/2010 page 10, next to last paragraph), in combination with and in the same relationship with the remaining elements and features of the claimed invention. Also, there is no motivation to combine none of these references to meet these limitations. It is for these reasons that applicant's invention defines over the prior art of record.

### **Response to Arguments**

32. Applicant's arguments have been fully considered, and some of they are persuasive.

33. Regarding the rejection under 103, Applicant's arguments have been considered.

34. As to claims 1–11, 13–19, 22, 23, and 25–30; the amendment overcame all rejections and the rejections are withdrawn. Claims are allowed over prior art of record.

35. As to claims 31–33, Applicant's arguments with respect to Bloom have been considered but are moot in view of the new ground(s) of rejection. In the instant rejection, Examiner has elaborated other prior art disclosures in the instant rejection. Goldman discloses automatically selecting a model generation method from a set of

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available model generation methods to match characteristics of the historical data about a system being modeled (see col. 1, lines 31–35; col. 3, lines 23–35, 49–58).

36. The argued subject matter of claims 31–33: “automatically selecting a model generation method from a set of available model generation methods to match characteristics of the historical data about a system being modeled” was well known at the time of invention.

37. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

38. Fisher teaches such subject matter (see paragraph [0085]).

39. Xu teaches such subject matter (see paragraph [0010]).

40. Goldman teaches such subject matter (see col. 1, lines 9–14).

41. Cabena teaches such subject matter (see page 11, 1st paragraph).

42. As to claims 34–40, Applicant's arguments with respect to Bloom have been considered but are moot in view of the new ground(s) of rejection. In the instant rejection, Examiner has elaborated other prior art disclosures in the instant rejection. Walter discloses enabling a user of a model generation tool to combine at least two models (see paragraphs [0027,9]), the combining including concatenating the predictions of the two models (see paragraphs [0028]).

### ***Conclusion***

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43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan C. Ochoa whose telephone number is (571) 272-2625. The examiner can normally be reached on 7:30AM - 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

44. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. C. O./ 10/8/2010  
Examiner, Art Unit 2123

/Paul L Rodriguez/

Supervisory Patent Examiner, Art Unit 2123